

What is claimed is:

1. A display device comprising:  
a spatial light modulator having an array of modulating elements forming a  
5 plurality of image regions; and  
a light generator configured to direct a different one of a plurality of  
substantially stationary light bands onto each of the plurality of image regions.
2. The display device of claim 1, where the plurality of light bands  
10 includes at least one of a red light band, a green light band, and a blue light band.
3. The display device of claim 1, where the light generator is  
configured to direct the plurality of bands of light onto image regions having at  
least one aligned edge.  
15
4. The display device of claim 3, where the image regions are of the  
same size.
5. The display device of claim 4, where the array of imaging elements  
20 has a generally rectangular shape with adjacent sides having relative sizes, and  
the image regions have generally rectangular shapes with adjacent sides having  
relative sizes different than the relative sizes of the array of imaging elements.
6. The display device of claim 1, further comprising a controller  
25 configured to control modulation of the spatial light modulator appropriate to  
produce a separate image in each image region.
7. The display device of claim 6, where the light bands are of different  
colors, and the controller is configured to control modulation of the spatial light  
30 modulator appropriate to produce differently colored component images of a  
composite image.

8. The display device of claim 6, where the controller further includes a spatial image separator configured to assign received image information to a corresponding one of the image regions.

- 5 9. The display device of claim 1, further comprising:  
a buffer adapted to receive image data for an image and buffer the image data to create a frame of the image;  
an image processing unit adapted to define a first sub-frame and at least a second sub-frame for the frame of the image from the image data, the second  
10 sub-frame being spatially offset from the first sub-frame, the image processing unit cooperating with the spatial light modulator to modulate at least one of the image regions according to the first and second sub-frames; and  
a display device adapted to alternately display the first sub-frame in a first position and the second sub-frame in a second position spatially offset from the  
15 first position.

10. The display device of claim 9, where the display device is adapted to overlap pixels of the first pixel matrix with pixels of the second pixel matrix.

- 20 11. The display device of claim 9, where the second sub-frame is spatially offset at least one of a vertical distance and a horizontal distance from the first sub-frame, and wherein the display device is adapted to shift display of the second sub-frame from display of the first sub-frame by the at least one of the vertical distance and the horizontal distance.

- 25 12. The display device of claim 9, where the image processing unit and spatial light modulator cooperate to modulate a first image region with the first sub-frame and to modulate a second image region with the second sub-frame.

13. A display device comprising:  
a light source configured to produce multi-spectral light;  
a spatial light modulator configured to modulate light received in a plurality  
of regions according to component images of a received composite image;  
5 an optical separator configured to separate multi-spectral light into a  
plurality of colored light bands, and to direct the light bands onto the regions of  
the spatial light modulator; and  
an optical combiner configured to combine the modulated light bands into  
a composite light band.
- 10 14. The display device of claim 13, further comprising projection optics  
configured to direct the composite light band toward a display medium.
- 15 15. The display device of claim 13, further comprising a controller  
configured to control modulation of the spatial light modulator appropriate to  
produce differently colored component images of a composite image.
- 20 16. The display device of claim 15, where the controller further includes  
a spatial image separator configured to assign received image information to a  
corresponding one of the image regions.
- 25 17. An electronic device comprising:  
a spatial light modulator having an array of modulating elements; and  
a light generator configured to direct a plurality of separate non-scanning  
light beams onto respective different regions of the array of modulating elements.

18. A method of making a display device comprising:  
providing a spatial light modulator having an array of modulating elements,  
the spatial light modulator configured to modulate separate image regions of the  
array of modulating elements according to different images; and  
5 providing a light generator configured to direct a different one of a  
substantially stationary plurality of bands of light onto each of the image regions  
of the array of modulating elements.
19. The method of claim 18, where providing a light generator includes  
10 providing a light generator configured to direct a plurality of light bands including  
at least one of a red light band, a green light band, and a blue light band.
20. The method of claim 18, further comprising providing a controller  
configured to control modulation of the array of modulating elements appropriate  
15 to produce a different image in each image region.
21. The method of claim 20, where providing a light generator includes  
providing a light generator configured to direct a plurality of bands of light of  
different colors, and providing a controller includes providing a controller  
20 configured to control modulation of the array of modulating elements appropriate  
to produce differently colored component images of a composite image.
22. The method of claim 20, where providing a controller includes  
providing a spatial image separator configured to assign received image  
25 information to a corresponding one of the image regions.
23. A method of forming an image for display comprising:  
directing a plurality of substantially stationary bands of light onto separate  
image regions of an array of modulating elements; and  
30 modulating the image regions of the array of modulating elements  
according to different images.

24. The method of claim 23, where directing a plurality of light bands includes directing at least one of a red light band, a green light band, and a blue light band.

5 25. The method of claim 23, where directing a plurality of bands of light includes directing a plurality of bands of light onto image regions having at least one aligned edge.

26. The method of claim 25, where directing a plurality of bands of light  
10 includes directing a plurality of bands of light onto image regions of the same size.

27. The method of claim 26, where directing a plurality of bands of light includes directing a plurality of bands of light onto an array of imaging elements  
15 with a generally rectangular shape with adjacent sides having relative sizes, with the image regions having generally rectangular shapes with adjacent sides having relative sizes different than the relative sizes of the array of imaging elements.

20 28. The method of claim 23, further comprising controlling modulation of the array of modulating elements appropriate to produce an image in each image region.

29. The method of claim 28, where directing a plurality of bands of light  
25 includes directing a plurality of bands of light of different colors, and controlling modulation of the array of modulating elements includes controlling modulation of the array of modulating elements appropriate to produce differently colored component images of a composite image, in the image regions of the array of modulating elements.

30

30. The method of claim 28, where controlling modulation of the array of modulating elements includes assigning received image information to a corresponding one of the image regions.

- 5 31. The method of claim 23 further comprising:  
receiving image data for an image;  
buffering the image data for the image, including creating a frame of the image;  
defining a first sub-frame and at least a second sub-frame for the frame of  
10 the image from the image data, the second sub-frame being spatially offset from the first sub-frame;  
displaying the first sub-frame in a first position; and  
displaying the second sub-frame in a second position spatially offset from the first position; and  
15 where modulating the image regions includes modulating at least one of the image regions according to the first and second sub-frames.

32. The method of claim 31, wherein displaying the second sub-frame includes overlapping pixels of the first pixel matrix with pixels of the second pixel  
20 matrix.

33. The method of claim 31, where the second sub-frame is offset at least one of a vertical distance and a horizontal distance from the first sub-frame, and wherein displaying the second sub-frame includes shifting display of the  
25 second sub-frame the at least one of the vertical distance and the horizontal distance from the first sub-frame.

34. The method of claim 31, where modulating the image regions includes modulating a first image region with the first sub-frame and modulating a  
30 second image region with the second sub-frame.

35. A display device comprising:

means for directing a plurality of bands of light onto separate fixed image regions of an array of modulating elements; and

5 means for modulating the image regions of the array of modulating elements according to different images.

36. The display device of claim 35, further comprising means for controlling modulation of the array of modulating elements appropriate to produce an image in each image region.

10

37. The display device of claim 36, where the means for directing a plurality of bands of light is further for directing a plurality of bands of light of different colors, and the means for controlling modulation of the array of modulating elements is further for controlling modulation of the array of  
15 modulating elements appropriate to produce differently colored component images of a composite image, in the image regions of the array of modulating elements.

38. A display device comprising:

20 a spatial light modulator having an array of modulating elements configured to spatially modulate incident light; and

a controller configured to control modulation of the spatial light modulator appropriate to produce an image in each of a plurality of separate image regions of the array of modulating elements according to received image information.

25

39. The display device of claim 38, where the controller is further configured to control modulation of the spatial light modulator appropriate to produce a component image, in each of the plurality of image regions, of a received composite image.

30

40. The display device of claim 39, where the component images correspond to images of different colors, and the controller is configured to control modulation of the spatial light modulator appropriate to produce differently colored component images that when combined form a composite colored image.

5

41. The display device of claim 38, where the controller further includes a spatial image separator configured to assign received image information to a corresponding one of the image regions.

10

42. The display device of claim 38, where the controller further comprises:

a buffer adapted to receive image data for the image and buffer the image data to create a frame of the image; and

an image processing unit adapted to define a first sub-frame and at least a  
15 second sub-frame for the frame of the image from the image data, the second sub-frame being spatially offset from the first sub-frame, the image processing unit cooperating with the spatial light modulator to modulate at least one of the image regions according to the first and second sub-frames;

the display device further comprising a display device adapted to display  
20 the first sub-frame in a first position and the second sub-frame in a second position spatially offset from the first position.

43. The display device of claim 42, where the display device is adapted to overlap pixels of the first pixel matrix with pixels of the second pixel matrix.

25

44. The display device of claim 42, where the second sub-frame is spatially offset at least one of a vertical distance and a horizontal distance from the first sub-frame, and wherein the display device is adapted to shift display of the second sub-frame from display of the first sub-frame by the at least one of the  
30 vertical distance and the horizontal distance.



45. The display device of claim 42, where the image processing unit and spatial light modulator cooperate to modulate a first image region.

46. An electronic device comprising:

5 a spatial light modulator having an array of modulating elements configured to spatially modulate incident light;

a controller configured to control modulation of the spatial light modulator appropriate to produce a component image in each of a plurality of separate image regions of the array of modulating elements according to received image  
10 information; and

an optical combiner configured to combine the component images into a composite image.

47. A method of forming an image comprising:

15 receiving information representative of an image;

assigning the received image information to a corresponding one of a plurality of substantially stationary image regions of an array of modulating elements; and

modulating the modulating elements in the corresponding one of the  
20 image regions according to the received image information.

48. The method of claim 47, where receiving information includes receiving information representative of a plurality of component images of a composite image, assigning received image information includes assigning the  
25 received information representative of each of the plurality of component images to respective ones of the plurality of image regions of the array of modulating elements, and modulating the modulating elements includes modulating the modulating elements of each of the image regions according to the assigned image information.

49. The method of claim 48, where receiving information includes receiving information representative of a plurality of component images of different colors of a composite colored image, and modulating the modulating elements includes modulating the modulating elements of each of the image  
5 regions appropriate to produce differently colored component images that when combined form the composite colored image.

50. Storage media having embodied therein a program of commands, adapted to be executed by a computer processor, to:  
10 receive information representative of an image;  
assign received image information to a corresponding one of a plurality of substantially stationary image regions of an array of modulating elements; and  
modulate the modulating elements in the corresponding one of the image regions according to the received image information.

15 51. The storage media of claim 50, where the program embodied therein is further adapted to be executed by a computer processor to receive information representative of a plurality of component images of a composite image, assign received information representative of each of the plurality of  
20 component images to respective ones of the plurality of image regions of the array of modulating elements, and modulate the modulating elements of each of the image regions according to the assigned image information.